

ABSTRACT OF THE DISCLOSURE

A portable multi-functional electrochemical biosensor system includes a plurality of sample cells, pluggable information memories and a multi-functional signal analysis processor. The biosensor system uses a set of sample cell and pluggable information memory to detect the concentration of a corresponding selected analyte. Each sample cell has a reaction zone on which a chemical substance is placed to react with the corresponding analyte and has at least two independent electrodes. Each corresponding pluggable information memory can provide parameters used for analysis. The multi-functional signal analysis processor has a microprocessor, an electrically erasable programmable read/write memory and an environmental temperature sensor. The concentration of the selected analyte is calculated by using the electrochemical reaction signal output from the sample cell and the parameters with cooperation of the environmental temperature sensor, and then an analysis result is output.